HFKP AUTOMOTIVE RELAY

Features

- 45A switching capability
- PCB terminals
- Two pin layout choices
- 1 Form A & 1 Form C contact arrangement
- Unenclosed and plastic sealed types available
- RoHS & ELV compliant

Typical Applications

Central door lock, Anti-theft lock, Power doors & windows,
Turning lamp, dangerous signal & scram lamp control,
Seat adjustment, Audio system, Air-conditioning, Fuel pump control,
Low temperature control, Rear window defoggers, Sunroof motor control,
Starter solenoid switches

CHARACTERISTICS

Contact arrangement	1A, 1C
Voltage drop (initial) 1)	NO:Typ.20mV,250mV max.(at 10A) NC:Typ.30mV,250mV max.(at 10A)
Max. continuous current 2) 9)	30A (at 85°C, 8h)
Max. switching current 3) 9)	Make: 100A (Lamp, Inrush current) Break: 60A (Resistive)
Max. switching voltage 4)	75VDC
Min.contact load	1A 6VDC
Electrical endurance	See " CONTACT DATA "
Mechanical endurance	$1x10^7$OPS (300OPS/min)
Initial insulation resistance	500MΩ (at 500VDC)
Dielectric strength 5)	between contacts: 500VAC between coil & contacts: 500VAC
Operate time 9)	Typ.: 5ms Max.: 10ms (at nomi. vol.)
Release time 6) 9)	Typ.: 3ms Max.: 10ms

Ambient temperature	-40°C to 125°C
Vibration resistance 7) 9)	10Hz to 40Hz 1.27mm DA 40Hz to 70Hz 49m/s^2 70Hz to 100Hz 0.5mm DA 100Hz to 500Hz 98m/s^2
Shock resistance 7) 9)	98m/s^2
Termination	PCB 8)
Construction	Plastic sealed, Unenclosed
Unit weight	Unenclosed: Approx. 16g Plastic sealed: Approx. 20g

1) Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).
2) For NO contacts, measured when applying 100% rated votage on coil.
3) For NO contacts, at 23°C, 13.5VDC, resistive load (100 cycles).
4) For NO contacts, see "Load limit curve" for details.
5) 1min, leakage current less than 1mA.
6) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
7) When energized, opening time of NO contacts shall not exceed 100μs, when non-energized, opening time of NC contacts shall not exceed 1ms, meantime, NO contacts shall not be closed.
8) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (250±3)°C , (5±0.3)s.
9) Only for the 12VDC coil voltage type.

CONTACT DATA 3)

at 23°C

Load voltage	Load type		Load current A			On/Off ratio		Electrical endurace	Contact material	Load wiring diagram 2)
			1C		1A	On s	Off s			
			NO	NC	NO					
13.5VDC	Resistive	Make	45	30	45	1.5	1.5	$1×10^5$OPS	$AgSnO_2$	See diagram 1
		Break	45	30	45					
	Flasher 1)		2×21W+5W	---	2×21W+5W	0.375	0.375	1000h	Special $AgSnO_2$	See diagram 2
			4×21W+2×5W	---	4×21W+2×5W	0.375	0.375	360h		

1) When it is utilized in flasher, a special $AgSnO_2$ contact material should be used and the customer special code should be (170) as a suffix. Please connect by the polarity according to the diagram below.

2) The load wiring diagrams are listed below:

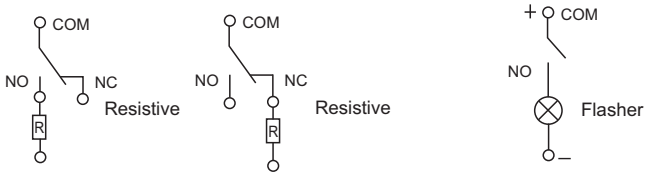


diagram 1

diagram 2

3) When the load voltage is at 24VDC or higher, or the applications conditions are different from the table above, please submit the detailed application conditions to Hongfa to get more support.

COIL DATA

at 23˚C

	Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance x(1±10%)Ω	Power consumption W	Max. allowable overdrive voltage 1) VDC	
						at 23˚C	at 85˚C
Standard	6	3.3	0.6	19	1.9	9.0	6.5
	12	6.8	1.2	90	1.6	19.6	14.3
	24	13.9	2.4	362	1.6	39.3	28.6
Sensitive	6	4.5	0.6	30	1.2	11.0	8.0
	12	9.0	1.2	120	1.2	22.1	16.0
	24	19.2	2.4	480	1.2	44.3	30.0

1) Max. allowable overdrive voltage is stated with no load applied, illustrated with open version.

ORDERING INFORMATION

HFKP / 012 -1H 1 T S (XXX)

Type

Coil voltage **006**: 6VDC **012**: 12VDC **024**: 24VDC

Contact arrangement **1H**: 1 Form A **1Z**: 1 Form C

Version[1)] **1**: U.S.A. Unenclosed model **2**: U.S.A. Plastic sealed model
3: European Unenclosed model **4**: European Plastic sealed model
5: U.S.A. Plastic sealed model, 3 yoke terminals
6: European Plastic sealed model 3 yoke terminals

Contact Material **T**: $AgSnO_2$

Coil Power **S**: Sensitive **Nil**: Standard

Customer special code e.g. (170) stands for flasher load

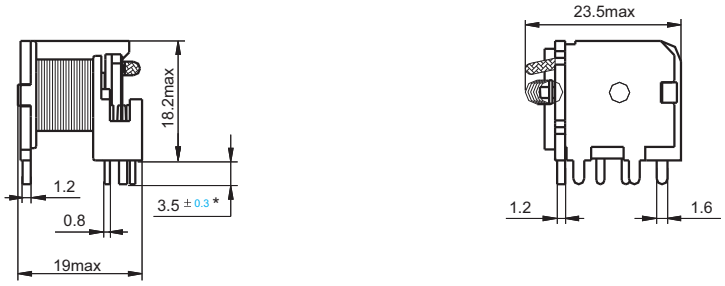
Notes: 1) If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts. For unenclosed type, because there is no cover protection, the products may be contaminated by particles during transportation, assembly or usage which may cause relay failure. So the products should be effectively protected at customer side. Hongfa suggest to use sealed type if no other special requirements.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

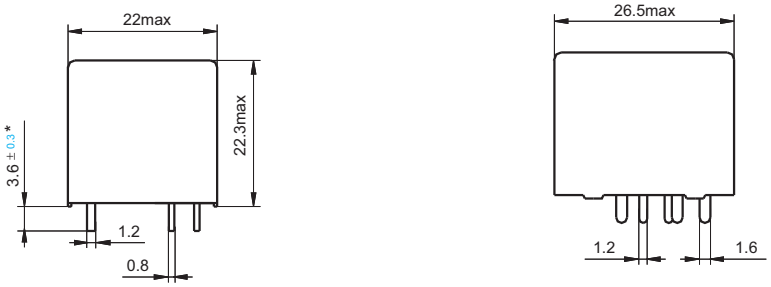
Unit: mm

Outline Dimensions

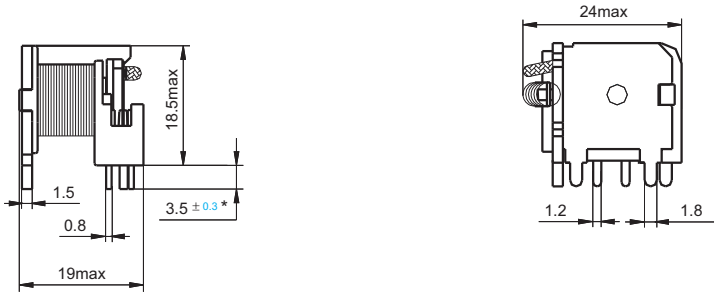
HFKP/□□□-1□1□□(XXX)



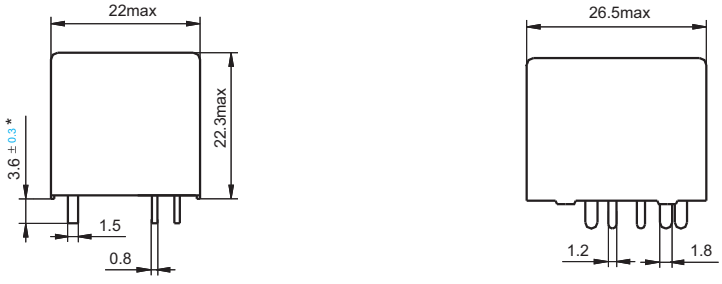
HFKP/□□□-1□2□□(XXX)



HFKP/□□□-1□3□□(XXX)



HFKP/□□□-1□4□□(XXX)

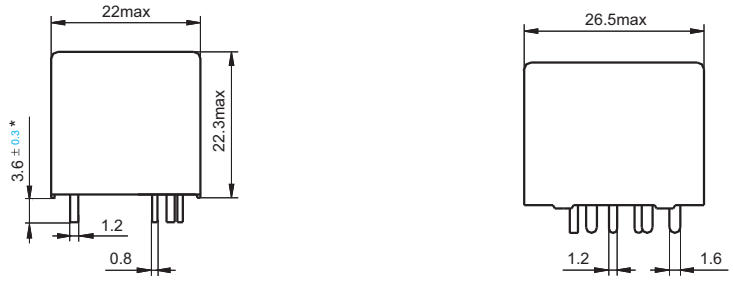


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

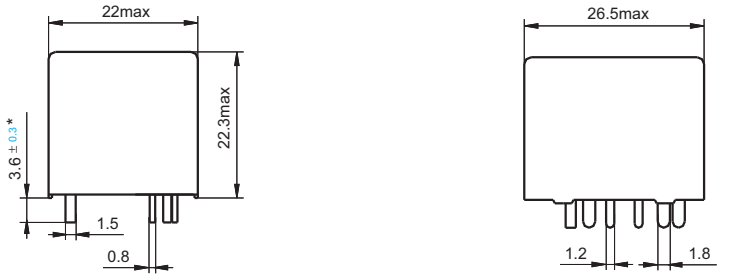
Unit: mm

Outline Dimensions

HFKP/□□□-1□5□□(XXX)

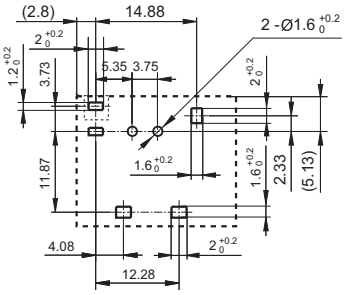


HFKP/□□□-1□6□□(XXX)

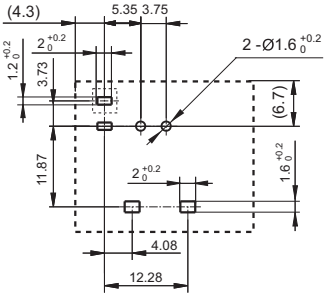


PCB Layout (Bottom view)

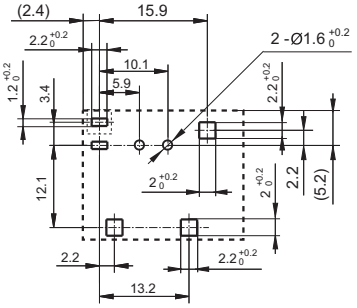
HFKP/□□□-1□1□□(XXX)



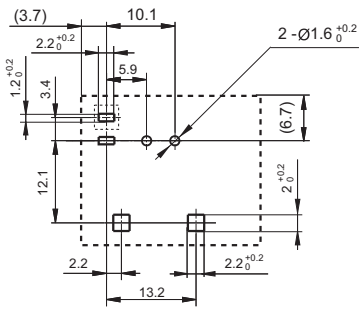
HFKP/□□□-1□2□□(XXX)



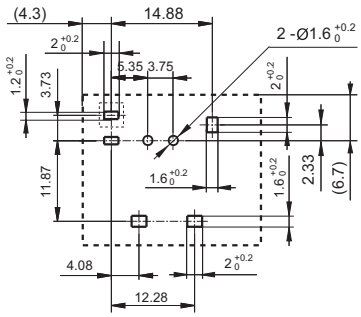
HFKP/□□□-1□3□□(XXX)



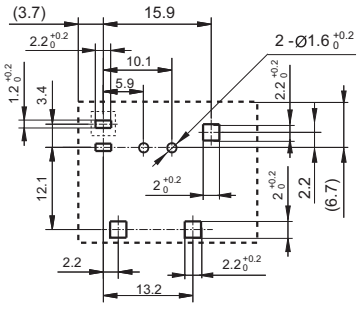
HFKP/□□□-1□4□□(XXX)



HFKP/□□□-1□5□□(XXX)



HFKP/□□□-1□6□□(XXX)



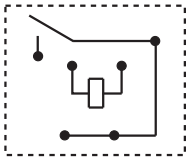
Remark: 1) * The additional tin top is max. 1mm.
2) The tolerance without indicating is always ±0.1mm.
3) ⬚ means that the mounting hole doesn't exist for HFKP/□□□-1H□□□(XXX) type

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

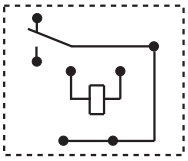
Unit: mm

Wiring Diagram (Bottom view)

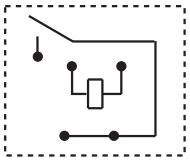
HFKP/□□□-1H1□□(XXX)
HFKP/□□□-1H3□□(XXX)
HFKP/□□□-1H5□□(XXX)
HFKP/□□□-1H6□□(XXX)



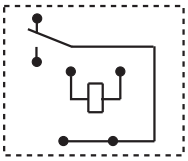
HFKP/□□□-1Z1□□(XXX)
HFKP/□□□-1Z3□□(XXX)
HFKP/□□□-1Z5□□(XXX)
HFKP/□□□-1Z6□□(XXX)



HFKP/□□□-1H2□□(XXX)
HFKP/□□□-1H4□□(XXX)

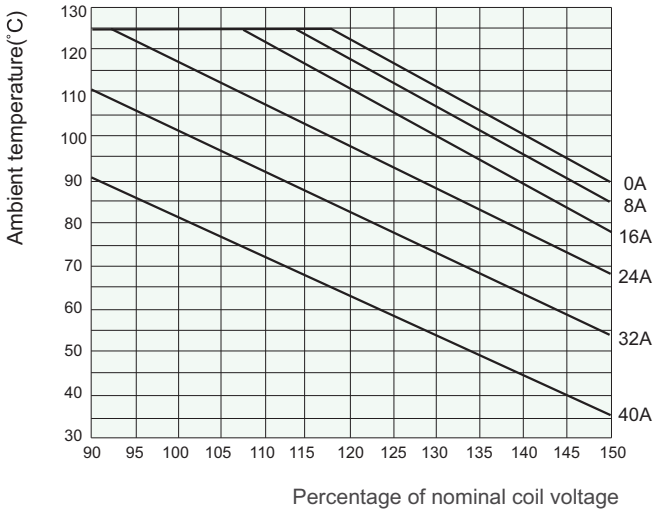


HFKP/□□□-1Z2□□(XXX)
HFKP/□□□-1Z4□□(XXX)



CHARACTERISTIC CURVES

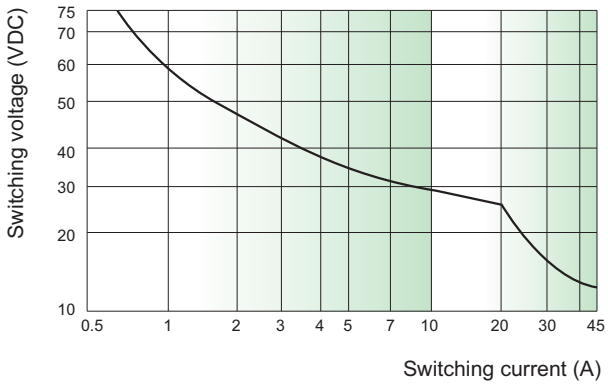
1. Coil operating voltage range



1) This chart takes sensitive unenclosed version as example.
2) The maximum allowable coil temperature is 180˚C. For the coil temperature rise which is measured by resistance is average value, we recommend the coil temperature should be below 170˚C under the different application ambient, different coil voltage and different load etc.
3) If the actual operating coil voltage is out of the specified range, please contact Hongfa for further details.

CHARACTERISTIC CURVES

2. Load limit curve (at 23˚C)



1) This chart takes NO contact, Resistive load as example.
2) The load and electrical endurance tests are made according to “CONTACT DATA” parameters’ table. If actual load voltage, current, operate frequency, or ambient temperature is different from “CONTACT DATA” table, please arrange corresponding tests for confirmation.